

REMARKS

This Amendment is in response to the Office Action mailed 11/04/2002. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

In the Office Action, claims 13-27 were rejected under 35 U.S.C. § 102(e); claims 18-20 were rejected under 35 U.S.C. § 103(a); prior amendments to the specification were objected; and the abstract of the disclosure apparently was objected.

Claims 21-34 have been cancelled without prejudice by this response. Claims 13-15 and 17 have been amended by this response. New claims 35-49 have been added. Claims 1-12 were previously cancelled. Accordingly, claims 13-20 and 35-49 remain pending in the application. Of the pending claims, claims 13 and 39 are independent claims.

I. Applicant's Interview Summary

A telephonic interview was held February 3, 2003 between Examiner Rick Chang and Applicant's Attorney, William E. Alford, regarding the above referenced patent application and the Office Action mailed on 11/04/2002. Towards the end of the interview, Independent claim 21 was briefly discussed with respect to the restriction requirement. The main focus of the interview was the objections to entry of specification amendments made in the Office Action and an overlapping reference number, mistakenly added to Figure 5 by Applicant's Attorney.

The amendment previously made by Applicant to the paragraph beginning at page 6, line 18 was first discussed. To avoid doubt, Examiner Chang was to indicate that the change made to

the paragraph beginning at Page 6, line 18 was to be entered in the next Office Action.

Specification amendments, including support, were then discussed for paragraphs beginning at the following page and line numbers: Page 7, line 23; Page 8, line 1; and Page 8, line 24. The details discussed with regard to the specification amendments and support are provided in this response.

The prior amendment to Figure 5 was discussed in that Applicant's Attorney made a mistake in adding the reference number "43" to the drawing, causing an overlap with a prior usage of the reference number in "spaces 43" at Page 7, line 27 of Applicant's specification, for example. It was agreed that Applicant's Attorney would resubmit the drawing change to Figure 5, correct the reference number 43 to 49, in accordance with the Specification Amendment to the paragraph beginning at Page 8, line 24, in order to clarify "the edge 49 of the first bond shelf 18".

The restriction and withdrawal of claims 21-34 was briefly discussed. Applicant's Attorney understood this to be a genus-species type of restriction requirement because of its restriction over the embodiments disclosed in the Figures. Examiner Chang explained that the restriction of claims 21-34 was not a genus-species type restriction but a separate invention restriction as claims 21-34 read on the alternate embodiment of Figure 7 due to the "providing a package housing having a first plurality of bonding pads located on a first surface of a first bond shelf" and "the first conductive strip wrapping around a first edge of the first bond shelf to at least one of the first plurality of bonding pads on the first surface of the first bond shelf" recited in independent claim 21.

No claim amendment was specifically discussed and thus no agreement was reached with respect to any claim amendment. No

prior art was discussed during this telephonic interview. No exhibit was shown nor was any demonstration conducted during this telephonic interview.

II. Specification

In section 3 of the Office Action, the Office Action objected to the amendments to the specification proposed in the amendment filed 10/17/2002 under 35 U.S.C. 132 because the amendments allegedly introduce new matter into the disclosure.

Applicant herein provides proposed specification amendments to correct overlapping reference numbers, to correct improper reference number usage, and correctly identify the element with its reference number. These specification amendments and their support in the originally filed application were discussed in the Examiner interview on February 3, 2003.

Page 7, line 23, paragraph amendment support:

i) layers 24 and 26 are described as busses 24 and 26 in the same paragraph at page 7, lines 26 and 27 of Applicant's originally filed specification.

ii) layer 28 is described as routing traces 28 at page 7, line 2 and page 8, line 19 of Applicant's originally filed specification.

iii) layer 30 is described as bus 30 at page 7, line 2 of Applicant's originally filed specification.

iv) layer 32 is described as contacts 32 in the same sentence, page 7, line 23 of Applicant's originally filed specification.

Page 8, line 1, paragraph amendment support:

i) Figure 1, as originally filed, illustrates "a first bond shelf 18, a second bond shelf 20 and a third bond shelf 22." [Applicant's Specification, page 6, lines 13-14].

ii) first bond shelf is designated by reference number 18 of Applicant's originally filed specification at page 6, lines 13-14.

iii) second bond shelf is designated by reference number 20 of Applicant's originally filed specification at page 6, lines 13-14.

iv) "first shelf 18" is referred to as "first bond shelf 18" of Applicant's originally filed specification at page 6, lines 13-14.

v) Figure 4 of Applicant's originally filed specification illustrates the first conductive strip 44 and the second conductive strip 46 wrapping around onto the first bond shelf 18 to connect to the bond pads 16 and not the second bond shelf 20.

vi) Figure 7 of Applicant's originally filed specification illustrates how the first conductive strip 44 and the second conductive strip 46 wrap around onto the first bond shelf 18 to connect to the bond pads 16.

vii) contacts are designated by the reference number 32 while printed circuit board is designated by reference number 34 in Applicant's originally filed specification at page 7, lines 5-6.

Page 8, line 24, paragraph amendment support:

i) Figure 1, as originally filed, illustrates "a first bond shelf 18, a second bond shelf 20 and a third bond shelf 22." [Applicant's Specification, page 6, lines 13-14]. Figure 5, as originally filed, illustrates from top to bottom, starting on top, the first bond shelf 18, the second bond shelf 20, and the third bond shelf 22. This can readily be confirmed by looking

at the layer of busses 24 and 26, the layer of layer of routing traces 28, and the layer of bus 30 referenced in Figures 1 and 5 as originally filed.

ii) Figure 4 as originally filed illustrates the conductive strips 44 and 46 along the edge of the first bond shelf 18.

iii) To plate along the edge of the first bond shelf 18, the edge of the first bond shelf 18 would not be masked off by the plating resist maskant 50.

iv) Figure 5 as originally filed illustrates the plating resist maskant 50 absent from the edge of the first bond shelf 18.

v) Figure 5 as originally filed illustrates the plating resist maskant 50 on the edges of the second bond shelf 20 and the third bond shelf 22 as well as the top of the first bond shelf 18, second bond shelf 20, and third bond shelf 22.

vi) Figure 4 as originally filed illustrates "notches 48 [] drilled into the edges of the first bond shelf 18 to separate the plated material into the first and second conductive strips 44 and 46." [Applicant's Specification, page 9, lines 4-46].

In sections 4 and 5 of the Office Action, it appears that the Office Action may have objected to the Abstract of the Disclosure. Applicant hereby provides a new Abstract of the Disclosure on a separate sheet with less than 150 words which is attached hereto as Exhibit A.

III. Drawings

Applicant has amended Figure 5 from its previous amendment as illustrated in the "REQUEST FOR APPROVAL OF DRAWING CHANGES submitted herewith. Applicant has changed the reference number

"43" to --49-- in accordance to the amendment to the specification to avoid overlapping reference numbering in therein. This amendment was specifically discussed in the Examiner Interview which was previously summarized. Applicant submits that no new matter has been added.

IV. Restriction Requirement

In section 2 of the Office Action, claims 21-34 were withdrawn, being made subject to a restriction requirement.

Applicant hereby cancels claims 21-34 without prejudice in order to comply with the restriction requirement.

V. Claim Rejections Under 35 U.S.C. § 102(e)

In section 7 of the Office Action, claims 13-17 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,858,816 issued to Sato et al ("Sato"). Applicant respectfully traverses.

Applicant understands the reference to 35 U.S.C. § 102(b) in the Office Action to be a typographical error and should have referred to a 35 U.S.C. § 102(e) rejection because Application No. 09/153,630, to which this application claims the benefit, was filed on 09/15/1998 prior to issuance of Sato on 01/12/1999. To support Applicant's understanding, the Office Action preceded the rejection citing 35 U.S.C. § 102(e) and not 35 U.S.C. § 102(b).

"To anticipate a claim, the reference must teach every element of the claim. 'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art

reference.' *Verdegaal Bros. V. Union Oil co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). 'The identical invention must be shown in as complete detail as is contained in the claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." [MPEP § 2131, Original 8th Edition, Aug. 2001, Pg. 2100-69].

Applicant has amended independent claim 13 to clarify the claimed invention. In particular, Applicant has amended the element of "removing a portion of the first conductive strip along the second surface of the bond shelf to form a pair of separate conductive strips" recited in claim 13. Support for this amendment is provided in Applicant's originally filed specification (See page 8, lines 4-5 and 8-9, and page 9, lines 4-7, in particular); originally filed claims (see claims 3 and 9, in particular), and in Applicant' originally filed drawings (see Figure 4, in particular).

The Office Action states that "Sato discloses forming a housing having a bond pad (2); plating and removing a conductive strip (10); drilling a portion of the bond shelf (19); mounting an IC and connecting the IC to the bond pad (Fig. 1(I)); and etching the conductive material (Fig. 1(g))." [Office Action, page 4, lines 12-14]. Applicant's respectfully disagree.

Applicant respectfully submits that Sato does not disclose "removing a portion of the conductive strip along the second surface of the bond shelf to form a pair of separate conductive strips along the second surface of the bond shelf" as recited in Applicant's amended claim 13. [Claim 13, lines X-Y]. Recall that Applicant's second surface is "along a thickness of the bond shelf". [Claim 13, line X]. Figure 4 of the present application, illustrates an example of separate conductive strips 44 and 46 along the thickness (i.e., vertical wall) of the bond shelf 18.

Sato does not disclose Sato's first plating film 10 having a portion removed to form separate conductors. Moreover, Sato's "conductor layer 9a formed on the inner wall of the cavity opening 3" is disclosed as being continuous in Sato's Figure 2. [Sato, Col. 4, lines 29-30, Figure 2].

For the foregoing reasons, Applicant respectfully submits that Sato does not anticipate Applicant's invention as claimed in amended independent claim 13.

Claims 14-17 depend directly or indirectly from independent claim 13. Applicant believes it has placed claim 13 in condition for allowance such that dependent claims 14-17 dependent therefrom with added limitations are also in condition for allowance.

Thus, Applicant respectfully requests the withdrawal of the 35 U.S.C. § 102(e) rejection of claims 13-17.

VI. Claim Rejections Under 35 U.S.C. § 103(a)

In section 9, the Office Action rejected claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Sato in view of U.S. Pat. No. 4,223,321 issued to E. J. Doyle Kenworthy ("Kenworthy"). Applicant respectfully traverses this rejection.

In section 10, the Office Action rejected claims 19-20 under 35 U.S.C. § 103(a) as being unpatentable over Sato, Kenworthy and further in view of U.S. Pat. No. 4,682,270 issued to Whitehead et al. ("Whitehead"). Applicant respectfully traverses this rejection.

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in

the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." [MPEP § 2142; Original 8th Edition, Aug. 2001, Pg. 2100-121]. To establish "obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." [MPEP § 2143.03, Original 8th Edition, Aug. 2001, Pg. 2100-126].

The remarks above regarding Sato and the 35 U.S.C. §102(e) rejection of independent claim 13 are incorporated herein by reference.

Applicant respectfully submits that Sato does not make obvious Applicant's combination of elements recited in independent claim 13.

Further, the Office Action alleges that "Kenworthy discloses [] masking all surfaces of the bond shelf except for the second surface and plating the second surface with a conductive material (col. 3, lines 56-59 and col. 4, lines 4-9) thereby forming fine pitch conductor patterns to electrically communicate with electronic components mounted therein in the housing." [Office Action, page 5, lines 1-4]. Applicant respectfully disagrees.

Kenworthy generally discloses a planar-faced electrode for ink jet printers as its title suggests. No bond wires or bonding to Kenworthy's electrode is made so that ink drops can be charged and uncharged to print characters on a page as described in Kenworthy's Col. 1, lines 10-29]. Specifically Kenworthy does not disclose masking a bond shelf as the Office Action alleges.

The Office Action states that "[i]t would have been obvious to one of ordinary skill in the art at the time [of] the invention was made to modify Sato by masking all surfaces of the bond shelf except for the second surface and plating the second surface with a conductive material to the Sato's housing, as taught by Kenworthy, for the purpose of forming fine pitch conductor patterns to electrically communicate with other electronic components mounted therein in the housing." [Office Action, page 5, lines 5-9]. Applicant respectfully disagrees.

The motivation suggested by the Office Action, "for the purpose of forming fine pitch conductor patterns to electrically communicate with other electronic components mounted therein in the housing" is not convincing.

"[T]he examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." [MPEP § 706.2(j), Original 8th Edition, Aug. 2001, Pg. 700-31; citing *Ex Parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App & Inter. 1985)].

The fine pitch conductor pattern referred to by the Office Action is for "the resolution requirements of the particular jet printing system in which the finished charge plate is to be installed." [Kenworthy, Col. 3, lines 41-43]. Moreover, the fine pitch required for ink jet printing may be insufficient for a bond shelf as the bond wires may electrically short together when mounted to bonding pads having such of a fine pitch or alternatively the bond pads may be of insufficient width to make a proper connection thereto with a bonding wire.

Additionally, to modify the fine pitch of Kenworthy for bond pads and bond wires would defeat its purpose of meeting high resolution requirements of ink jet printing. "If [a] proposed modification would render the prior art invention being

modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." [MPEP § 2143.01, Original 8th Edition, Aug. 2001, Pg. 2100-124; citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)].

Furthermore, claims 18-20 depend directly or indirectly from independent claim 13. Applicant believes it has placed claim 13 in condition for allowance such that dependent claims 18-20 dependent therefrom with added limitations are also in condition for allowance.

Thus, Applicant respectfully requests the withdrawal of the 35 U.S.C. § 103(a) rejections of claims 18-20.

VII. Other Claim Amendments

Applicant has amended claim 14 to clarify that the conductive material is plated onto the "second surface of the bond shelf".

Applicant has amended claim 15 to clarify that the drilling of the portion of the bond shelf "include[es] the conductive strip."

Applicant has amended claim 17 to change its dependency to claim 14 and changed an instance of "a" to --the-- to indicate the prior usage of "conductive material" in claim 14.

These amendments to claims 14, 15, and 17 were not made for reasons related to patentability.

VIII. New Claims

Applicant has added new claims 35-49.

New claims 35-38 depend from independent claim 13. New dependent claims 35-38 are supported by Applicant's drawings of the figures as originally filed (See Figures 1, 4, and 7 in particular) and Applicant's specification and claims as originally filed (See Page 8, lines 1-4; Page 9, lines 9-16, in particular). Applicant believes it has placed independent claim 13 in condition for allowance such that dependent claims depending therefrom with further limitations are also in condition for allowance.

New claims 39-49 are of a first impression. New claim 39 is a new independent claim. New claims 40-49 depend from independent claim 39. New claims 39-49 are supported by Applicant's drawings of the figures as originally filed (See Figures 1, 4, 5, and 7 in particular) and Applicant's specification and claims as originally filed (See claims 13-16; Page 8, line 1 through Page 9, line 19, in particular).

Independent claim 39 includes the limitation of "removing a portion of the conductive material along the side surface of the bond shelf to form a pair of separate conductive strips along the side surface of the bond shelf" which Applicant respectfully submits is not disclosed in Sato. [Claim 39, lines 8-10]. Applicant believes independent claim 39 is in condition for allowance along with independent claim 13. Accordingly, Applicant believes that dependent claims 40-49 depending from claim 39 with further limitations are also in condition for allowance.

Applicant respectfully submits that new claims 35-49 are in condition for allowance.

Marked-up Version of Amended Paragraphs

Page 7, line 23, the paragraph beginning there at was amended as follows:

"The bond pads 16[, contacts 32] and layers of busses 24 [,] and 26, routing traces 28, bus 30, and contacts 32 may all be interconnected by vias 38. The busses 24 and 26 may include clearance spaces 42 that electrically isolate the busses 24 and 26 from the vias 38. Additionally, the busses 24 and 26 are also separated by spaces 43."

Page 8, line 1, the paragraph beginning there at was amended as follows:

"Figure 4 shows a first conductive strip 44 and a second conductive strip 46 that wrap around an edge of the first bond shelf 18 [20] to connect the bond pads 16 to the power busses 24 and 26. The conductive strips 44 and 46 can be separated by a pair of notches 48 formed in the first bond shelf 18 [20]. Some of the bond pads 16 are connected [by strip 44] to bus 24 by conductive strip 44 while other bond pads 16 are connected to bus 26 by strip 46. The separate strips allow the bond pads 16 on the first bond shelf 18 to be connected to two different voltage levels. The other bond pads 16 on the first bond shelf 18 may be [20 are] interconnected to other layers and/or contacts 32 [34] by vias 38."

contradiction

show

Page 8, line 24, the paragraph beginning there at and continuing onto page 9 was amended as follows:

"The conductive strips 44 and 46 can be formed by initially masking off all surfaces of the package housing, except the edge 49 of the [third shelf 22] first bond shelf 18 with a plating resist maskant 50, as shown in Figure 5. The masked housing can then be dipped into a plating bath 52 as shown in Figure 5. The plating bath 52 plates a conductive material such as copper onto the edge 49 of the first bond shelf 18. The maskant 50 is then removed and the notches 48 can be drilled into the edges of the first bond shelf 18 to separate the plated material into the first and second conductive strips 44 and 46. All exposed copper surfaces may then be plated with gold."

Marked-up Version of Amended Abstract of the Disclosure

The originally filed Abstract of the Disclosure was amended as follows:

"Methods of assembling an [An] electronic package including forming a housing with [that may include] a first bond pad [and a second bond pad located] on a top surface of a bond shelf, forming a conductive strip along a side surface or edge of the [The] bond shelf [may have an edge] , and removing a portion of the conductive strip to form a pair of separate conductive strips. The conductive strip may be formed by plating a conductive material onto the bond shelf into unmasked areas thereof. The conductive strip may include a portion that extends around from the side surface to the top surface of the bond shelf to form a bond pad or (couple to a bond pad on the top surface.) The extended portion may also anchor the conductive strip and the separate conductive strips to the housing and reduce the likelihood of delamination during removal of the portion of the conductive strip to form the separate conductive strips. [The package may have a first conductive bus that may be connected to the first bond pad by a first conductive strip that extends along the edge of the bond shelf. The package may also have a second conductive bus that may be connected to the second bond pad by a second conductive strip that extends along the edge of the bond shelf.]"

different embodiment

Marked-up Version of Amended Claims

1 13. (Amended Thrice) A method for assembling an electronic
2 package, comprising:
3 forming a housing which has a bond pad located on a first
4 surface of a bond shelf, the bond shelf having a second surface
5 along [the] a thickness of the bond shelf;
6 forming a conductive strip along the second surface of the
7 bond shelf; and
8 removing a portion of the conductive strip along the second
9 surface of the bond shelf to form a pair of separate conductive
10 strips along the second surface of the bond shelf.

1 14. (Amended Twice) The method as recited in claim 13, wherein
2 the conductive strip is formed by plating a conductive
3 material onto the second surface of the bond shelf.

1 15. (Amended Twice) The method as recited in claim 13, wherein
2 the portion of the conductive strip is removed by
3 drilling a portion of the second surface of the bond
4 shelf including the conductive strip.

1 17. (Amended Twice) The method as recited in claim [13] 14,

2 wherein

3 the portion of the conductive strip is removed by

4 etching away a portion of [a] the conductive material

5 on the second surface of the bond shelf.

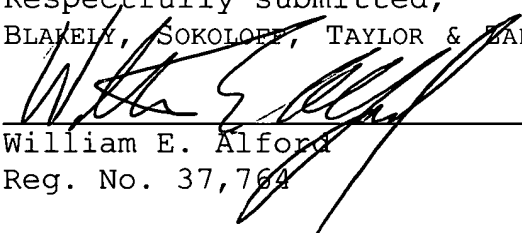
CONCLUSION

In view of the foregoing it is respectfully submitted that the claims are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance of the claims at an early date is solicited.

The Examiner is invited to contact Applicant's undersigned counsel by telephone at (714) 557-3800 to expedite the prosecution of this case should there be any unresolved matters remaining. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees in connection with the filing of this paper, including extension of time fees, to Deposit Account 02-2666 and please credit any excess fees to such deposit account.

Respectfully submitted,
BLAKELEY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: February 4, 2003



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on: February 4, 2003.



Susan McFarlane
Date 2/4/03